Patent Claims

1. Method for producing tubular propellant charges with a very high charge density and high progressivity, **characterized** in that the charge comprises one or preferably at least two propellant tubes (10-12, 28-30, 48-52) which have circular outer and inner boundary surfaces and which are radially perforated in their entirety with combustion or ignition channels (2, 19-21, 37) at an e-dimension distance selected in relation to the actual type of propellant and its desired combustion characteristics, and in that, before initiation of the charge, at least one of the total number of outer surfaces of these propellant tubes that are available for initiation has been treated with an inhibition, surface treatment or surface coating (13-18, 33-36) that delays the propagation of ignition to this surface, so that combustion of the propellant tubes is partially mutually overlapping.

2. Method in accordance with Claim 1, **characterized** in that at least two of the perforated propellant tubes (48-52) included in the charge have been arranged one after the other.

3. Method in accordance with Claim 1, **characterized** in that, of the propellant tubes (10-12, 28-30, 48-52) included in the charge, at least one is arranged inside the internal cavity of an outer propellant tube.

4. Method in accordance with Claims 1-3, **characterized** in that each propellant tube intended to be entirely ignited by propagation, after another propellant tube has previously been ignited by propagation, has been inhibited,

surface treated or surface-coated with a substance (13-18, 33-36) intended to delay the propagation of ignition along its respective outer boundary surfaces, so that the desired delay in the propagation of ignition is achieved.

5. Method in accordance with Claims 1-4, **characterized** in that the inhibition, surface treatment or surface coating of each propellant tube intended to be ignited by propagation, after another propellant tube has previously been ignited by propagation, is executed in such a way that only limited declines in the jointly increasing generation of propellant gas by the entire charge occur during the total combustion of the latter.

6. Method in accordance with Claims 1-5 for the production of so-called modular charges consisting of propellant unit charges (10-22) encapsulated in a combustible housing or means of protection against the weather, climate and/or wear and tear, which charges are executed in such a way that they are capable of being combined in an optional number to form charges with the desired energy content, where each such part charge exhibits a central ignition channel (22) to facilitate the propagation of ignition between all part charges combined together to form a unit, **characterized** in that combined within each modular charge are at least two highly perforated propellant tubes (28-30), of which each outer propellant tube (28, 29) is inhibited, surface-treated or coated with a substance (16-18) having a different rate of combustion along its outer surfaces such that the propellant tubes are caused to ignite by propagation in a predetermined and mutually partially overlapping ignition sequence.

7. Propellant charge for barrel weapons having a circular outer cross section and a very high charge density and high progressivity produced in accordance with the method in accordance with one or other of Claims 1-6, **characterized** in that it comprises two or more radially highly perforated propellant tubes (10-12, 28-30, 48-52) arranged concentrically inside one another and/or directly after one another and with circular outer and inner cross sections, where each outer propellant tube has an inner cavity with a cross-sectional form adapted to the outer diameter of an inner propellant tube that may be arranged therein, and where each propellant tube in its entirety is perforated with combustion or ignition channels (2, 19-21, 37) arranged radially in the cross section of the propellant tubes, which channels are separated from one another at distances or e-dimensions adapted for the respective propellant tube in relation to the desired combustion times and the type of propellant contained therein.

8. Propellant charge in accordance with Claim 7, **characterized** in that the propellant tubes (10-12, 28-30, 48-52) have been given a previously determined and mutually partially overlapping ignition sequence by inhibition, surface treatment or surface coating with a substance having a lower rate of combustion than the propellant tube itself at the time of initiation of the charge.

9. Propellant charge in accordance with Claim 8, **characterized** in that it comprises layers of a propellant (47) for delaying the propagation of ignition arranged between the different propellant tubes.

10. Propellant charge in accordance with Claims 7-8, **characterized** in that it has been shaped

externally as a modular charge (10-21) of a type previously disclosed per se.

11. Propellant charge in accordance with Claims 7-10, **characterized** in that the different propellant tubes (10-12, 28-30, 48-52) are produced from different propellants with different rates of combustion and perforated at different e-dimension distances.

12. Propellant charge in accordance with Claims 7-10, **characterized** in that, for a plurality of propellant tubes (10-12, 28-30, 48-52) arranged inside one another, a propellant tube previously ignited by propagation has, by means of a selected e-dimension and/or a selected type of propellant, been given a longer combustion time than a propellant tube subsequently ignited by propagation.

13. Propellant charge in accordance with Claims 7-12, **characterized** in that the inner cavity of the innermost propellant tube of the charge has been adapted to accommodate a fuse (53) for the initiation of the charge, which fuse can be combined with an ignition propagation charge consisting of loose granular propellant.